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NOTES AND LITERATURE.

GENERAL BIOLOGY.

A Well Balanced Book on Theoretical Evolution.[1] — It seems to be generally agreed that we are beginning a new era in the study of Evolution ; an era in which analytic and experimental methods will replace that of sharp logic. But the experimentalist works blindly without hypotheses and these the speculative writings have provided. It is a useful thing, at the beginning of this new era to have these hypotheses brought together by a broad-minded investigator ; and this is the very arduous task that Plate has well done.

The immediate purpose of the work has been to stem the tide away from Darwinism, to show that whatever limitations the theory of natural selection may have as a complete theory of the origin of species it remains the only satisfactory theory of adaptation. The book, which is much increased in size over the first edition, is divided into five chapters. The first deals with the objections, less or more serious, that have been raised against Darwinism in the strict sense ; the second with the different forms of selection and elimination ; the third with the complementary theories ; the fourth with the basic elements of evolution from which the theory of selection starts, namely, excess of births, variability, and means of isolation ; the fifth with the range of applicability of the Darwinian and the Lamarckian factors. Then follow a Bibliography of over 10 pages and a good index.

The book is exceedingly satisfactory in most particulars. It is refreshing to find an author who does not insist that there is only *one* method of evolution. "Das Problem der Artbildung" he says, page 228, "darf nicht einseitig behandelt werden, weder ausschlieslick von Lamarck'schen noch vom selectionistischen Standpunkte ; nur die Vereinigung beider Principien führt zum Ziele." Naturally the author does not follow Weismann in rejecting the inheritance of acquired characters and he is quite ready to accept the possibility of orthogenesis. In this breadth of view Plate doubtless approaches nearer to the spirit of the great master than the Neo-Darwinians. Nevertheless, in so far as a criticism may be aimed at the book it concerns Plate's unwillingness to accept more freely some of the other subsidiary or alternative theories that have been proposed. Thus the reviewer thinks that Plate does scant justice to the claims of the mutation theory; and in his discussion of means of isolation he entirely fails to mention Mendel's law of the segregation of parental qualities in the germ cells of mongrels. Nevertheless, this law must be an important factor in preventing the swamping of mutations. In his account of the different theories to explain organic adaptation there is not included the theory proposed by the reviewer and later by T. H. Morgan that there has been a selection by the organism of the environment for which its structure is fitted — but as the preface date is antecedent to the appearance of that theory such conclusion could hardly be expected.

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[1] Plate, L. *Ueber die Bedentung des Darwin 'schen Selectionsprincips und Probleme der Artbildung.* Zweite, vermehrte Auflage. Leipzig: Engelmann, 1903. 247 pp.

This brief review can give no adequate idea of the scope, soundness and helpfulness of the book. It is recommended to biologists as by far the best on the subject.

C. B. D.

Experiments in Heredity.[1]— Stimulated by the rediscovery of Mendel's Law of crossing, Bateson and Saunders have thrown together the results of their studies on crossing plants and poultry. As this is the first extensive post-Mendelian account of hybridization experiments in animals it may fairly be called epoch-making.

Miss Saunders worked with two hairy species of Lychnis and also a glabrous variety; with two varieties of Atropa; two species, each with two varieties, of Datura; and various races of Matthiola. In the first cross the hairy character is dominant and the glabrous recessive, as shown by the fact that all the first crosses were hairy. In the second generation, however, both dominant and recessive forms appeared in Mendelian proportions.

The Atropa experiments were less complete, but appeared to be Mendelian, showing dominance in the first color of the type form. The Datura experiments, involving 12 characters, were much more complex. Also there were exceptions to Mendelism in some cases, although striking adherence to it in others. Finally, the Matthiola experiments were based on so many races mixed together that the

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[1] Bateson, W. and Miss E. R. Saunders. *Report I to the Evolution Committee, Royal Society, London:* Harrison & Sons, St. Martin's Lane, 1902. 160 pp.